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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/769,047 | 01/30/2004 | S. Brad Herner | MA-100-I | 7037 |

33971 7590 02/06/2006

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| EXAMINER |
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CHEN, BRET P

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| ART UNIT | PAPER NUMBER |
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1762

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/769,047

Applicant(s)

HERNER ET AL.

Examiner

B. Chen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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DETAILED ACTION

Claims 1-16 are pending in this application, which is a DIV of Serial Number 10/441,601 now US Patent 6,815,077.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the mailing address of each inventor. A mailing address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing address should include the ZIP Code designation. The mailing address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

It does not identify the city and either state or foreign country of residence of each inventor. The residence information may be provided on either an application data sheet or supplemental oath or declaration.

Drawings

The drawings dated 1/30/04 have been accepted.

Specification

The disclosure is objected to because of the following informalities listed below.

Appropriate correction is required.

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The attempt to incorporate subject matter into this application by reference to 09/927648, 10/326470, and 10/036291 in paragraphs 48 and 51 are improper because there is no recitation that the application is commonly assigned. Reliance on a commonly assigned copending application by a different inventor may ordinarily be made for the purpose of completing the disclosure. See *In re Fried*, 329 F.2d 323, 141 USPQ 27, (CCPA 1964), and *General Electric Co. v. Brenner*, 407 F.2d 1258, 159 USPQ 335 (D.C. Cir 1968).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitani et al. (5,864,161). Mitani discloses a method of forming a semiconductor device in which silane and boron trichloride can be reacted to form a polysilicon film (col.12 lines 8-17 and col.15 lines 32-38). Specifically, the reference teaches that boron, phosphorus, or arsenic can be used as the

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impurity (col.7 lines 17-18). The desired boron concentration can be 1×10^{19} to 1×10^{22} atoms/cc (col.16 lines 15-22). However, the reference fails to teach the appropriate dopant concentration.

It is noted that the reference clearly teaches a boron concentration of 1×10^{19} to 1×10^{22} atoms/cc which overlaps the claimed range. Overlapping ranges are *prima facie* evidence of obviousness. It would have been obvious to one having ordinary skill in the art to have selected the portion of Mitani's range of concentration that corresponds to the claimed range.

The limitations of claims 2-16 have been addressed above.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman (5,096,856) in view of Mitani et al. (5,864,161). Freeman discloses a method of forming in situ phosphorous doped polysilicon upon a surface in which a predetermined ratio of silane and a gaseous phosphorous containing compound such as phosphorous trichloride are simultaneously passed through a furnace at predetermined pressure and temperature to provide a uniformly phosphorous doped layer of polysilicon on the surface (col.1 lines 10-13 and col.2 lines 7-11. The pressure can be 10-20 mTorr and the temperature can be about 500 to 700 °C (col.2 lines 11-16). However, the Freeman fails to teach the appropriate doping concentrations as well as the appropriate pressure and temperature.

It is noted that the reference clearly teaches that flow rates, temperature and pressure affect the buildup of phosphorous (col.3 lines 1-17). Given such a teaching, one skilled in the art would realize that temperature, pressure, and flow rates would affect the phosphorous concentration. Hence, it would have been obvious to the skilled artisan to optimize the

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appropriate deposition parameters including temperature, pressure, and flow rates with the expectation of obtaining the claimed doping concentrations.

In addition, the reference fails to teach boron trichloride.

Mitani discloses of forming a semiconductor device in which silane and boron trichloride can be reacted to form a silicon film (col.12 lines 8-17). Specifically, the reference teaches that boron, phosphorus, or arsenic can be used as the impurity (col.7 lines 17-18). One skilled in the art would realize, after reading Mitani, the boron and phosphorus are conventionally used as dopants in a semiconductor device and that boron trichloride is a conventional precursor to utilize to form the boron dopant. It would have been obvious to substitute a boron dopant for use in Freeman's process because Mitani teaches that boron and phosphorus are conventionally used as dopants. Furthermore, it would have been obvious to utilize boron trichloride to form a boron dopant because Mitani teaches the conventionality of utilizing same to form the dopant.

The limitations of claims 2-16 have been addressed above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Chen whose telephone number is (571) 272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bc
2/1/06



BRET CHEN
PRIMARY EXAMINER